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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/077,184 | 02/15/2002 | Naokuni Muramatsu | 782 219 | 9515 |

25191 7590 02/18/2003

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EXAMINER

VU, PHUONG T

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2841

DATE MAILED: 02/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,184

Applicant(s)

MURAMATSU ET AL.

Examiner

Phuong T. Vu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 39-46 is/are pending in the application.
- 4a) Of the above claim(s) 42-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-41 and 46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Election/Restrictions

2. Claim 42 is withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species V, Figure 10.
3. Claims 43-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected Species VI, Figures 11-12.

Claim Objections

4. Claim 46 is objected to because of the following informality: the claim recites Corson "ally" instead of "alloy". Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 39-41, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 6,380,903 B1) in view of Fair et al. (US 6,250,964 B1). Regarding claim 39, Hayes shows (Prior Art figures 3A-3B) a connection construction between a

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planar antenna 30 and a circuit board installed in a wireless device, said planar antenna comprising a planar antenna element 32 and a plurality of elastically deformable pins (tips of 36, 37) the pins are formed by bending a plurality of thin strips 36, 37 projected from the side end of the planar antenna element in substantially vertical direction with respect to the plane of the planar antenna element at a plurality of positions of the side end of the planar antenna element. Hayes does not teach that said circuit board comprises a plurality of through holes, wherein the planar antenna is electrically and mechanically connected to the circuit board by inserting the elastically deformable pins into the through holes. However, Fair discloses a circuit board 300 with metallic shield case 1200 having elastically deformable pins 2030 that are inserted in through holes 2091 in the circuit board. The Fair reference is relied upon solely for this teaching of mechanically and electrically attaching a planar metallic element to a circuit board by inserting elastically deformable pins on the planar metallic element into holes in the circuit board. This method of mounting the shield case is expedient in the art and is equivalent to other known methods such as mounting with screws or other fasteners, frictional force, or solder. It would have been obvious to those skilled in the art at the time the invention was made to modify the mounting configuration of Hayes to include mounting pins extending from strips on the metallic element and holes in the circuit board as taught by Fair so as to electrically and mechanically connect the metallic planar antenna element to the circuit board by inserting the pins of the metallic planar element into the holes of the circuit board to provide an easier, more reliable and cost effective method of mounting, dismounting, and/or remounting.

Regarding claim 40, Hayes shows that the planar antenna comprises a power supply strip 37 and a short circuit strip 36 formed by bending two thin strips projected from one side end of the antenna element in a substantially vertical direction with respect to the plane of the planar antenna element. Fair teaches providing pins 2030 extending from strips 2010 that are elastically deformable by bending formed at the tip portions of the strips. Fair teaches that the pins are mechanically and electrically connected to the circuit board ground when inserted into the circuit board holes. In the above-mentioned combination, a power supply spring pin and a short circuit spring pin that are elastically deformable by bending would be formed at tip portions of the power supply strip and the short circuit strip. The circuit board of Hayes inherently comprises a power supply circuit and a short circuit. The above mentioned combination would necessarily have provided a power supply hole and a short circuit hole each having an inner wall to which a power supply conductive layer and a short circuit conductive layer would connect to the power supply circuit and the short circuit so that the power supply spring pin and the short circuit spring pin are detachably inserted into the power supply hole and the short circuit hole of the circuit board in a bending deformable manner so as to connect mechanically and electrically the planar antenna and circuit board.

Regarding claim 41, it would have been obvious to provide in the above mentioned combination a planar antenna which comprises a plurality of connection spring pins formed by bending a plurality of thin strips projected from a side end of the planar antenna element in a substantially vertical direction with respect to a plane of the planar antenna element at a plurality of portions of the side end of the planar antenna


element other than the portions at which the power supply strip and the short circuit strip are formed wherein the plural connection spring pins of the planar antenna are inserted into the plural connection holes of the circuit board in a bending deformable manner so as to connect mechanically the planar antenna and the circuit board to further secure the planar antenna. Providing additional connection spring pins would provide a more reliable attachment of the antenna to the circuit board.

Regarding claim 46, Hayes teaches that the planar antenna element may be formed from copper or any other known conductive metal compositions. It would have been obvious to those skilled in the art at the time the invention was made that the planar antenna element may be formed from any of the claimed materials as these materials are conductive, resilient, mechanically strong, and cost effective.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong T. Vu whose telephone number is (703) 308-0303. The examiner can normally be reached on Mon. & Tues., 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (703) 308-3121. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-4341.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

PTVu 
Patent Examiner
February 10, 2003